

# Claims

- [c1] 1.A MMT containing motor fuel additive composition which reduces and modifies both fuel intake system and combustion chamber deposit formation for the purpose of reducing engine octane requirement increase and allows the use of lower levels of MMT while retaining engine performance comprising a mixture of:(a)a fuel conditioner component comprising:(i)from about 10 to about 90 weight percent, based upon the total weight of the fuel conditioner component, of a polar oxygenated hydrocarbon having an average molecular weight in the range of about 200 to about 500, an acid number in the range of about 25 to about 175, and a saponification number in the range of about 30 to about 250, and(ii)from about 10 to about 90 weight percent, based upon the total of the fuel conditioner component, of an oxygenated compatibilizing agent preferably having a solubility parameter in the range of about 7.0 to about 14.0 and moderate to strong hydrogen capacity; and(b)a MMT compound.
- [c2] 2.The MMT containing motor fuel additive composition according to Claim 1, allowing the MMT to be reduced below 8.26 milligrams of Mn per liter of gasoline while maintaining desired engine performance.
- [c3] 3.The MMT containing motor fuel additive composition according to Claim 1, wherein said additive composition is added to the base fuel in an amount of from about 40 ppm to about 1000 ppm.
- [c4] 4.The MMT containing motor fuel additive composition according to

Claim 1, wherein said additive composition is added to the base fuel containing a detergent in an amount of from about 60 ppm to about 500 ppm.

[c5] 5.The MMT containing motor fuel additive composition according to Claim 1, wherein said additive composition is added to the base fuel simultaneously with any other additives.

[c6] 6.The MMT containing motor fuel additive composition according to Claim 1, wherein said additive composition is added to the base fuel after any other additives has been added.

[c7] 7.The MMT containing motor fuel additive composition according to Claim 1, wherein said MMT compound is present in a amount of from 0.5 to 8.26 milligrams of Mn per liter of gasoline, preferably from 1.0 milligrams to 8.26 milligrams of manganese per liter.

8.A MMT containing motor fuel additive composition which reduces and modifies both fuel intake system and combustion chamber deposit formation for the purpose of reducing engine octane requirement increase and allows the use of lower levels of MMT while retaining engine performance comprising a mixture of:(a)from about 10 to about 90 weight percent, based upon the total weight of components a and b, of a detergent component selected from the group consisting of(i)a reaction product of:(A)a substituted hydrocarbon of the

formula  $R_1 - X$

(I)

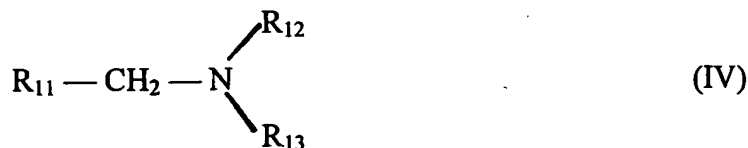
[c8] wherein  $R_1$  is a hydrocarbyl radical having a molecular weight in the

range of about 150 to about 10,000, and X is selected from the group consisting of halogens, succinic anhydride and succinic dibasic acid, and (B) an amino compound of the



[c9] wherein Y is O or  $\text{NR}_5$ ,  $\text{R}_5$  being H or a hydrocarbyl radical having 1 - 30 carbon atoms; A is a straight chain or branched chain alkylene radical having 1 - 30 carbon atoms; A is straight-chain or a branched-chain alkylene radical having 1 - 30 carbon atoms, m has a value in the range of 1 - 15; n has a value in the range of 0 - 6; and  $\text{R}_2$  is selected from the group consisting of H, a hydrocarbyl radical having a molecular weight in the range of about 15 to about 10,000, and a homopolymeric or heteropolymeric polyoxyalkylene radical of the formula  $\text{R}_3 - ((\text{Q})_a(\text{T})_b(\text{Z})_c)_d$  (III)

[c10] wherein  $\text{R}_3$  is H or a hydrocarbyl radical having 1 - 30 carbon atoms, Q, T, and Z are polyoxyalkylene moieties having 1 - 6 carbon atoms, a, b and c each have values ranging from 0 - 30, and d has a value in the range of 1 - 50, and (ii) a polybutylamine or polyisobutylamine of the formula



[c11] where  $\text{R}_{11}$  is a polybutyl or polyisobutyl radical derived from isobutene and up to 20% by weight of n-butene and  $\text{R}_{12}$  and  $\text{R}_{13}$  are identical or different and are each hydrogen, an aliphatic or aromatic hydrocarbon, a primary or secondary, aromatic or aliphatic

aminoalkylene radical or polyaminoalkylene radical, a polyoxyalkylene radical or a heteroaryl or heterocyclyl radical, or, together with the nitrogen atom to which they are bonded, form a ring in which further hetero atoms may be present;(b)a fuel conditioner component comprising:(i)from about 10 to about 90 weight percent, based upon the total weight of components a and b, of a polar oxygenated hydrocarbon having an average molecular weight in the range of about 200 to about 500, an acid number in the range of about 25 to about 175, and a saponification number in the range of about 30 to about 250, and(ii)from about 10 to about 90 weight percent, based upon the total weight of components a and b, of an oxygenated compatibilizing agent preferably having a solubility parameter in the range of about 7.0 to about 14.0 and moderate to strong hydrogencapacity; and(c)a MMT compound.

[c12] 9.The MMT containing motor fuel additive composition according to Claim 8, wherein said MMT compound is present in a amount of from 0.5 to 8.26 milligrams of Mn per liter of gasoline, preferably from 1.0 to 8.26 milligrams per liter of gasoline.

10.The MMT containing motor fuel additive composition according to Claim 8, allowing the MMT to be reduced below 8.26 milligrams of Mn per liter of gasoline while maintaining desired engine performance.

[c13] 11.The MMT containing motor fuel additive composition according to Claim 8, wherein said additive composition is added to the base fuel in an amount of from about 100 ppm to about 1000 ppm.

[c14]

12.A motor fuel of this invention can comprise refinery streams or refinery streams and ethers, like MTBE or ETBE in the proportion of 0.5% to 17.2% by volume; or refinery streams and alcohols such as methanol or ethanol or isopropyl alcohols and their compatibilizers, in a proportion of 0.5% to 15% by volume.

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